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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/564,598	05/18/2006	Andrew David Laver Humphris	SH-PT099	1836
3624 7590 01/09/2009 VOLPE AND KOENIG, P.C. UNITED PLAZA, SUITE 1600 30 SOUTH 17TH STREET PHILADELPHIA, PA 19103			EXAMINER RAEVIS, ROBERT R	
			ART UNIT 2856	PAPER NUMBER
			MAIL DATE 01/09/2009	DELIVERY MODE PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

### Office Action Summary

**Application No.**

10/564,598

**Applicant(s)**

HUMPHRIS ET AL.

**Examiner**

Robert R. Raevis

**Art Unit**

2856

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 09 December 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-6, 8, 11-23, 25, 26, 28, 29 and 31-46 is/are pending in the application.
- 4a) Of the above claim(s) 2, 3, 20, 22, 23, 25, 32 and 33 is/are withdrawn from consideration.
- 5) ☒ Claim(s) 29, 31 and 34-38 is/are allowed.
- 6) ☒ Claim(s) 1, 4-6, 8, 11-19, 21, 26, 28 and 39-44 is/are rejected.
- 7) ☒ Claim(s) 45 and 46 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-846)
- 3) ☐ Information Disclosure Statement(s) (PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_

#### DETAILED ACTION

Claims 8,26,15,39-46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

As to claims 8,26, the hole is not adapted to dissipate energy, as Para 61 indicates that the film/coating filling the hole carries this out. Note that the “the film will act to both dissipate energy” (Para 61).

As to claim 15, “one micrometer”.

As to claim 39, “proportional to the *spring constant* of the beam *and* the *topography* of the sample” is new matter.

Claims 39-46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

As to claim 29, how is the restoring force “proportional to the *spring constant* of the beam *and* the *topography* of the sample”? What might the function be? ( $F = K * \text{topography} ??$ ) What does the “topography” represent? Note that the disclosure does provide that the beam applies Hooks Law, but “proportional” relationship does not relate to a numerical value of topography...it relates the amount of actual deflection of the beam.

Claims 6,1-4,8,11-14,16-19,21,26,28,42,43,44 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claim 6, the tip and beam are unconnected elements, and thus the claim is not directed to an article/device ("probe"), and thus is an aggregation of parts.

As to claim 16, isn't the "a probe detection mechanism" (line 6 from bottom) the same as the "probe detection mechanism" (of lines 4-5), or are there two mechanisms?

Claim 43 depends upon itself. What claim should it depend upon?

As to claims 42,44, how is this claim directed to elected Figure 7? Where is the claimed "force generator" that does all that in Figure 7? Where is the "capillary" feature? Are these claims non-elected?

As to claims 20,22, "force generating means" is not consistent with base claim 6's "force generator".

Claims 6,12,13,14,15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erie et al, in view of either Hough et al or Minne.

Erie et al teach (col. 6, lines 54-62) a probe for AFM that employs a beam and tip, the beam of which is coated with polymer. The probe is such that bending and vibration are induced by light, inducing mechanical energy to the beam. After the light is discontinued, the mechanical

energy (vibration) is naturally dissipated due to friction and the damping due to the materials of construction.

Erie does not refer to a tip radius.

As to claims 6,14, it would have been obvious to employ a tip having a radius of 100 nm or less as either Hough et al (Para 44) or Minne (col. 2, lines 40-50) teach use of tips smaller than that value to provide for accurate measuring in AFMs. In addition, note that use of the AMF in a "contact" (col. 8, line 1) mode will result in a force applied to the cantilever that is greater than the restoring force from bending.

As to claim 12, it would have been obvious to apply the polymer in any known manner.

As to claim 13, there are many layers on the beam, which inherently have a spring constant. Also, the value claimed is in the range of an AFM.

As to claim 15, the 1 micrometer movement is commonly employed in such microscopes.

Claims 39,40,41,42,43 are rejected under 35 U.S.C. 103(a) as being unpatentable over Erie et al.

As to claims 39,40,41, in addition to above, it is known to secure beams to substrates for purposes of attaching it to the system. In addition, Erie teaches use of a detection mechanism 310,320 (actually, 160), and there are many layers on the beam, which inherently have a spring constant. Also, the value of the claimed spring constant is in the range of an AFM. Finally, the force applied to the beam is a function of spring constant (especially during "contact" mode.

As to claims 42,43, the feed back signal 280 controls the base 290 which will move the sample relative to the tip, and the system operates in a “contact” mode. Also, the claimed force is in the range of what is employed in AFM.

Claims 45,46 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

This is a RCE of applicant's application No. All claims are drawn to the same invention claimed in the earlier application and could have been finally rejected on the grounds and art of record in the next Office action if they had been entered in the earlier application. Accordingly, **THIS ACTION IS MADE FINAL** even though it is a first action in this case. See MPEP § 706.07(b). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no, however, event will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Robert R. Raevis whose telephone number is 571-272-2204. The examiner can normally be reached on Monday to Friday from 5:30am to 3pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Hezron Williams, can be reached on 571-272-2204. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

/Robert R. Raevis/

Primary Examiner, Art Unit 2856